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ABSTRACT

The purpose of this paper is: (1) to propose models to be used in evaluating relative time and cost factors involved in monograph cataloging within a hospital library, and (2) to test the models by performing a cost and time analysis of each cataloging method studied. To establish as complete a list of cataloging work units as possible, several hospital catalogers in the Detroit area were interviewed to learn the pattern of steps they follow. A check-list of cataloging work was then prepared to test the following possible approaches to cataloging: (1) original cataloging, using either Library of Congress (LC) or National Library of Medicine (NLM) systems, (2) cataloging with LC cards, (3) cataloging with LC cards, but utilizing NLM subject headings, (4) cataloging with LC proofcopy, and (5) cataloging from NLM bibliographic information. Data for the cost-time analysis was collected during March of 1969 at the Wayne State University School of Medicine Library (WSUML). Fifty titles considered suitable for a hospital library were cataloged using each of the above approaches. The different cataloging methods measured are discussed in relation to the hospital library situation. For each method there is a table listing the time and cost values for every work unit with alternatives available within each method. (Author/JB)

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REPORT

No. 51

Cost and Time Analysis of Monograph Cataloging in Hospital Libraries: A Preliminary Study

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Cost and Time Analysis of Monograph Cataloging in Hospital Libraries: A Preliminary Study *

Report No. 51

by

Linda Angold

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Detroit
June 1969

INTRODUCTION

Librarians have long been concerned with cost and time involved in cataloging operations. Representative plans and attempts at studies in the past include the American Library Association Catalog Section's presentation in 1925 of a "Plan for an Investigation into and Report on the Cost of Cataloging" (1) which contained a detailed list of cataloging activities to be measured. However, no action was taken by the Council of the American Library Association to sponsor this study. Miller's analysis of cataloging costs at Iowa University in 1936 was a sophisticated effort to measure the time and cost of small operations and of types of cataloging. (2) Some libraries, primarily those in colleges and universities, followed suit by testing and subsequently establishing minumum standards of production within their cataloging departments. In recent years many significant studies of the costs and time involved in technical processes have been published. A project in technical processes seminar by the Graduate School of Librarianship at the University of Denver in 1965 yielded a paper entitled "Cost Analysis Study, Technical Services Division, University of Denver Library". (3) In the section of the paper devoted to cataloging, a fairly detailed measurement of time and costs for various cataloging activities was presented. Two years later Fasana and Fall published a similar study of processing costs at Columbia University Libraries. (4)

Because the above studies were made within a specific environment, the results are difficult to generalize. In 1953 Felix Reichman commented on this problem: "Every survey confirms the belief that libraries, like books, are distinctive, and that resemblances are coincidental only. This situation has to be kept in mind in using the reports of different libraries for statistical calculations". (5) Swank noted in a speech in 1956 that "the economy of (cataloging departments) performance may vary appreciably not only from library to library but also from year to year in the same library". (6) Rather than studying the cost and time of cataloging operations in a specific or limited environment, another approach is to establish a model so that a library could select and measure functions applicable to itself and experiment with alternatives also included in such a model. A library could measure its own progress toward a more efficient operation rather than attempting to make comparisons with other situations which are not applicable. The results of studies utilizing models will thus produce data which are comparative on a relative rather than an absolute basis with respect to cost and time.

Little investigative work has been published on cataloging procedures for medical libraries and almost none which could relate to hospital libraries. These libraries are often one or two man operations and often operated by librarians with little or no experience in cataloging. Because of the pressures to provide several services there is a need to find the best method of cataloging for hospital libraries in terms of both time and cost. Many methods of cataloging are available to the hospital librarian. The need to choose

the best method is of real importance in cases where new libraries are started or in situations where backlogs exist because the librarian does not have time himself or cannot hire staff to undertake rapid cataloging.

PURPOSE

The purpose of this paper, then, is twofold:

(1) To propose models to be used in evaluating relative time and cost factors involved in monograph cataloging within a hospital library, and

(2) To test the models by performing a cost and time analysis of each cataloging method studied.

With the use of these models, hospital librarians will be able to evaluate their current method of cataloging by substituting, adding, and deleting elements as necessary. At the same time they can experiment with other methods or alternative approaches to cataloging operations which will lead to more efficient use of time. Librarians who are interested in revision or change in their cataloging activities will be able to apply these models and determine what changes are warranted from the standpoint of time, cost, or both. Librarians who are seeking a method to use in cataloging for a new or not previously cataloged collection can use the analysis of the cataloging approaches measured in this study as a guide in selecting a method for their library.

METHODOLOGY

To establish as complete a list of cataloging work units as possible, several hospital catalogers in the Detroit area were interviewed to learn the pattern of steps they follow. On the basis of their information a check-list of units involved in monograph cataloging was prepared to test the following possible approaches to cataloging:

(1) original cataloging, using either Library of Congress (LC) or National Library of Medicine (NLM) systems,

(2) cataloging with LC cards,

(3) cataloging with LC cards, but utilizing NLM subject headings,

(4) cataloging from LC proofcopy, and

(5) cataloging from NLM bibliographic information.*

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* LC and NLM have cataloging "systems". As can be seen from this list, an attempt has been made to combine these two systems as a method or approach to cataloging for a hospital library. The terms "method" or "approach" will be used in discussing the five alternatives to cataloging studied and the term "system" used to refer to the LC and NLM "approach" to cataloging.

Data for the cost-time analysis was collected during March of 1969 at the Wayne State University School of Medicine Library (WSUML). Fifty titles considered suitable for a hospital library were cataloged using each of the above approaches. Each approach was followed through from beginning to end, except where steps overlapped and substitution of data could be made.

All work units were performed by the writer. An assumption of this preliminary study is that in a comparison of alternative methods and of alternatives within methods, it would be best to have one person perform all tasks, rather than measure the work of several people doing assigned activities and working at different rates of speed and accuracy. This created an artificial situation; for example, the time measurements were not made against routine procedures which develop when people do the same thing day after day. The author had no cataloging work experience using any one of the cataloging methods and it is hoped that no bias was introduced toward any one method. However, it must be emphasized that the time involved in performing some of the units measured in times reported may vary from the actual work situation where they are performed as part of a job and not for the purpose of measurement.

Each approach to cataloging was divided into work units, and an attempt was made to measure only the actual time involved in completing each work unit for the 50 titles. This study did not measure such things as storage delays or the time involved in preparing to perform activities. As many work units took very little time individually, a decision was made to batch each unit in an attempt to achieve conformity in data collecting. Each unit was repeated several times and, except for the initial performance of the activity, no adjustment from one unit to another was required.

Labor costs for this study are calculated using an annual salary of $8,000 for professional librarians and $5,000 for nonprofessional staff. Steps performed by a cataloger at WSUML are considered "professional" in this study. Excluding vacation time, holidays, and weekends, a work year is about 225 days. A person earning $8,000 per year makes approximately $35.00 each day or $5.10 per hour (8.5¢ per minute) in a seven hour day. An individual earning $5,000 per year makes approximately $22.22 each day, $3.20 per hour, or 5.2¢ per minute.

DEFINITIONS AND EXPLANATIONS OF WORK UNITS

As previously mentioned, some work units are included in more than one method of cataloging. To define steps which are not self-explanatory, it was decided to group them into pre-cataloging, cataloging, and post-cataloging work units. This eliminates the necessity of redefining terms applicable to more than one method. For complete lists of units included within each cataloging method studied, see Tables 1 through 5.

Pre-cataloging work units

Within this group are units which are related to one or more of the cataloging methods being measured and which occur before actual cataloging takes place. These units have been included in the study because if

LC or NLM bibliographic data are to be used, the fact has to be accepted that books may be received before the bibliographic data are published. These steps are followed only when LC cards or proofcopy or NLM bibliographic data are not available when a book arrives. (This procedure would not ordinarily be necessary if original cataloging were done without any backlog in processing.) It is important that current materials be made available as soon as possible. There is little justification for purchasing a new edition of a text book and have it shelved in a work room while the library clientele use the old edition.

a) Establishing temporary entries. This unit consists of designating a temporary entry for a book (on the basis of title page information), writing it in pencil on the inside back cover, stamping the book with the library's identification and attaching a date due slip.

b) Typing temporary slips for the public catalog. This unit involves typing the author's name, title, place of publication, publisher, date of publication, and the date the book was received on a slip of paper for filing in the public catalog.

c) Searching for NLM bibliographic information. This unit involves locating bibliographic information in the NLM Catalog or Current Catalog to use for cataloging books with the NLM system. When information is found the page is marked with a paper clip and hash marks made to indicate its location on the page.

d) Facsimile copying of NLM bibliographic information. Facsimile copy is prepared of pages containing the information found in c. The cataloger uses the facsimile copy as a work sheet. The alternative to reproducing the information is to copy it on a sheet of paper.

e) Sorting and filing LC proofcopy. Proofcopy must be sorted, alphabetized and interfiled with other proofcopy.

f) Typing multi-copy order forms. Multicopy order forms can be used for ordering both books and LC cards.* Each part of the forms has a use, and only two are actually related to cataloging. One of the copies is used for ordering LC cards and one is used as a temporary slip in the public catalog. Thus, only 2/5 of the cost of the forms and the salary for performing the task is applicable to cataloging costs. In ordering LC cards, the alternative to multicopy order forms is the card order form provided by the Library of Congress.

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* Multicopy order forms have been prepared using the new LC machine readable order format. At the time of this study, the suitability of these forms for ordering LC cards had not been determined.

g) Typing card order forms provided by LC. Eventually these forms (and a few substitutes) will be the only forms accepted by the LC for ordering cards. Although not done in this study, a carbon copy of the order form could be used as a temporary slip for the public catalog if multicopy order forms are not used by the library. This would save time and money later, as the necessity for retyping the same information on a temporary slip would be eliminated.

h) Preparing multicopy order forms for sending to LC. This unit involves separating the parts of the multicopy order forms used for ordering LC cards from the rest of the forms. Orders are sorted and put in order by number or author and title. Envelopes used for sending the orders to the Library of Congress are typed. (Only the latter part of this procedure is necessary if machine readable forms are used.)

Cataloging work units

The units listed below are those which are defined as pertaining to the actual cataloging of a book from the time it reaches the cataloger (with or without bibliographic information) through the preparation of the catalog cards.

a) Establishing main and name added entries. In original cataloging this unit may involve the use of the Anglo-American Cataloging Rules, an authority file, bibliographic catalogs, reference books, the library's own catalogs, etc., depending upon the degree of sophistication of the library's cataloging and the tools available. After interviewing several hospital librarians in the Detroit area, the author determined that the institutions doing original cataloging generally cataloged directly from title page information. Thus, in performing this step the title page was the primary source of information and other sources were used only when additional information was needed to establish entries.

b) Comparing bibliographic information with the book and checking added entries listed to determine if anything should be added, deleted, or altered. Using LC cards, proofcopy, or NLM bibliographic information the edition statement, publisher information, etc., are checked against the book to be certain that the information agrees with that in the book. If not, a correction is made. A check mark is placed by those added entries that are acceptable and additions or alterations are noted. If a library chooses to follow LC or NLM entries exactly, this is not included as all entries are acceptable.

c) Assigning subject headings. In this study, Medical Subject Headings (MeSH) and medical dictionaries were used to determine the correct terms for the subjects which applied to books being cataloged originally. On the average two subject headings were assigned to each book.

d) Checking the library's subject catalog for examples of call numbers. This is not a necessary step in the flow or original

cataloging, but it enables the cataloger to see where other books on the same subject as the one being cataloged are located in the library's collection. This is especially helpful if the cataloger has assigned more than one subject heading to a particular book.

e) Assigning call number. Either with or without the aid of information gleaned from the library's subject catalog, classification numbers are assigned to the books that are cataloged originally. In this study the LC classification schedules, or any other classification schedule, with the abbreviated Cutter table (7), should be comparable as far as time is concerned.

f) Checking the shelf list, making and filing a temporary slip. Whether call numbers are assigned to books as a step in original cataloging or are accepted as they appeared on an LC card or proofcopy or in one of the NLM catalogs, the shelf list is checked to see if there are duplications of call numbers. This process is unnecessary if LC or NLM information is used exclusively, but is included to provide a check in libraries that use one of the above methods in conjunction with original cataloging. Temporary slips are written and filed in the shelf list. These slips can be very abbreviated--in this study, they include the call number, author's last name, and shortened title.

g) Writing out the bibliographic information. For books that are originally cataloged, all bibliographic information is organized for typing. The alternative is to record this information in an orderly fashion as it is determined. Time must then be allowed for writing the additional information not recorded during other steps, e.g., place of publication, publisher, date, pages, and illustration or bibliography notes.

h) Typing the master card and proofreading. The master card contains all information pertaining to a book that the library records. In original cataloging and cataloging based on LC proofcopy and NLM information, a master card is typed after all bibliographic information for a book has been established. After the master card is complete and correct, two alternatives exist depending upon the facilities available to a library; additional cards can either be typed or facsimile copies made from the master card.

i) Typing additional cards and proofreading them. If the library types the additional cards in original cataloging or cataloging from LC proofcopy or NLM information, they must be proofread and corrected. It was found that libraries typing all cards generally included only basic information on additional cards, e.g., full call number, author, title, place of publication, publisher, date, pages, and illustration or bibliography statements. On the average, four additional cards are needed for each title.

j) Facsimile copying of additional cards. This unit is included in original cataloging and cataloging based on LC proofcopy or NLM information if a library has facsimile reproduction facilities available. In this study a Xerox machine was used. The machine is loaded with special card sheets which contain four cards each. Four master cards are placed in a plastic card holder divided into four sections corresponding to the card

stock. Using this method four cards are copied with each exposure. To obtain four additional cards for each master card four exposures are necessary. This is the same in cost as one exposure and one complete card sheet.

Post-cataloging work units

These are units which take place after actual cataloging has been completed and are common to all systems measured in this study. There is no real sequence of these units and each library has its own pattern according to convenience. Although data were collected on several work units, the cost is essentially the same no matter which method of cataloging is used and is therefore not reported here.

DATA AND DISCUSSION

Each method of cataloging has advantages others do not and must be judged on its merits and on its applicability to the individual environment of a hospital library. Those in charge of hospital libraries frequent have no formal training in cataloging techniques. Time spent in cataloging in one or two man library operations must be taken from the time available for other services. As with every library, funds are not unlimited, consequently all routines must be carried out efficiently in both staff time and cost.

The different cataloging methods measured will be discussed in relation to the hospital library situation. For each method there is a table listing the time and cost values for every work unit with alternatives available within each method. (Tables 1 through 5.) Table 6 is a summary of Tables 1 through 5 giving the time and basic cost involved in each alternative of each method. Table 7 is a list of the cataloging instruments applicable to this study; that is, the bibliographic and classification instruments necessary for cataloging in one or more of the methods discussed. Table 8 is a list of supplies used in the various units of the methods that were studied.

1. Original cataloging

Original cataloging refers to the procedures in which bibliographic description, classification, and subject description are determined by the cataloger to suit the library's needs. The Anglo-American Cataloging Rules, The LC classification schedules and MeSH were used for testing and gathering data for this study. The results of using other combinations of classification instruments should be comparable as far as time is concerned.

The greatest advantage of original cataloging seems to be that books may be processed soon after arrival with no delay while waiting for LC cards or other bibliographic information to arrive. However, keeping in mind the one or two man library staff, this advantage is negated by time and cost factors. From Table 6 it can be seen that even the fastest and least expensive alternative within the original cataloging system is more lengthy

and expensive than any other method studied. In addition, libraries relying solely or primarily on original cataloging will find it necessary to purchase cataloging instruments. A library using the LC classification system should have:

LC classification schedules	$17.75
Subject Headings Used in the Dictionary Catalogs of the Library of Congress	15.00
Total	$32.75

Libraries following the NLM system would need:

NLM classification...	$ 2.00
Medical Subject Headings (MeSH)	3.00
Total	$ 5.00

Using a combination of the above two systems, e.g., LC classification with NLM subject headings, all or part of both sets are needed. Further, additional institutional and biographical directories would have to be purchased specifically for cataloging purposes. Another factor to consider is that original cataloging, no matter what system is used, requires a greater degree of subject familiarity than the other approaches analyzed. The cataloger must know and understand medical concepts and terminology. Hospital librarians without scientific or medical backgrounds are at an initial disadvantage. They must refer to dictionaries and other reference tools and texts in order to determine the relationship of concepts and the meanings of terms before cataloging many of the books they encounter. Of course, they eventually come to an understanding of these terms and concepts, but the process of familiarization takes time and costs money.

2. Cataloging with LC cards

In this paper cataloging with LC cards means use of the cards sent to a library by the Library of Congress and acceptance of the bibliographic information they contain, with minor alterations as necessary to fit the objectives of the library. From Table 6 it can be seen that in this study cataloging with LC cards requires less time than the other systems measured. The basic cost of material (excluding cards) and labor is lower than other systems. Even when the cost of the cards is included, comparison of original cataloging and cataloging with LC cards shows that for the same number of books, using the cards is still less expensive than original cataloging.

For example, for the library which receives 200 titles per year and catalogs them originally, it can be calculated from the Tables that the least expensive ($1.62 per book) and least time-consuming (19.99 minutes per book) method of original cataloging costs $324.00 plus cataloging instruments and takes approximately 66.63 hours. If, on the other hand, the library orders five LC cards for each of the 200 titles, the following situation

may occur. In 1967 McNamara studied the availability of LC and NLM cataloging for titles usually collected by hospital libraries and found that hospital libraries can obtain LC cataloging information for 98% of the materials they collect within four months after publication. (8) There is reason to believe, therefore, that cards ordered from LC will arrive for 196 books. Let us assume that 100 card sets are ordered by card number and 100 by author and title. The library receives 98 card sets from each group of 100 orders, leaving a total of 4 titles to be cataloged originally.

LC cards are 10¢ for the first card if ordered by card number and 15¢ for the first card if ordered by author and title. The four additional cards are 6¢ each in both cases. Cards ordered by number would cost $33.32 (34¢ per set) and those ordered by author and title would cost $38.22 (39¢ per set) for a total of $71.54. Using the figures for the least expensive method of cataloging with LC cards (Table 6) we arrive at a cost of $107.80 and time of approximately 32.47 hours for cataloging 196 books for a total cost of $179.34.

To determine the cost and time of cataloging the remaining four books, the same rates used by the library doing original cataloging are applied. The cost is $6.48 and the time involved is 1.33 hours. The cost (20.16¢) and time (7.76) minutes) of ordering the four card sets that were never received must also be considered. Thus, the overall cost and time involved in cataloging the 200 books is $186.02 and 33.93 hours plus classification instruments necessary for the original cataloging.

This manipulation of figures is impressive. Even if a library orders only 50% of its cards by number, the total cost of cataloging with LC cards is definitely lower than that of cataloging originally. The time involved in original cataloging is double that spent in cataloging with LC cards.

However, the delay between the time of arrival of the books and the receipt of cards presents a definite disadvantage in using LC cards. McNamara found that "the average number of days for availability of information after the title was received was...35 days for LC cards...."(9) However, 52% of the books used in McNamara's study arrived on standing order as soon as they were published. Card sets for these books were ordered when they arrived. Presumably the books also arrived at the Library of Congress at about the same time. Much of the delay between receipt of these books and the corresponding cards resulted not only because of time involved in processing card orders but also because the Library of Congress had not cataloged the books at the time the orders were received. Hospital libraries are not as likely to have standing order arrangements with publishers. Most hospital librarians must wait until the books are published and book reviews, advertisements, and prices are available before making selections and filling out purchase orders or requests. When they order card sets, there is a greater chance that the Library of Congress will have cataloged the books and that cards will have been printed so that for hospital libraries, the actual delay between book receipt and card arrival should be less than 35 days.

In some hospital libraries which catalog with LC cards, newly received books are held until cards arrive. This is unnecessary delay in allowing a book to be used. The books can be marked with an ownership stamp, date due slips attached, temporary entries assigned, and circulated until cards arrive for full cataloging, or, at least the books can be stamped with identification markings and put on a non-circulating shelf. The obvious result is that the "storage delay" while waiting for LC cards would be eliminated and the books accessible to patrons during this period.

3. Cataloging with LC cards, but utilizing NLM subject headings

In this study cataloging with LC cards and NLM subject headings means the acceptance of the bibliographic information and classification on the LC cards, but the subject headings are converted to NLM headings. This method is becoming increasingly popular with medical librarians who like the ease of using the LC cards but prefer the more specific NLM subject headings.

Harrish's "A Comparison of Library of Congress and National Library of Medicine Subject Headings" in 1967 showed that many of the basic headings of both systems are either the same or synonymous. (10) Also, with the increasing amount of shared cataloging between the Library of Congress and the National Library of Medicine, NLM subject headings often appear on the LC cards.

A library cataloging 200 titles with this method could receive card sets for 196 as noted above. Using the least time-consuming alternative of this system of cataloging, it costs $139.16 (excluding the cost of the cards) and takes 38.51 hours to catalog 196 books. The cost of the LC cards and the costs and times for cataloging the remaining four books originally and preparing the unfilled orders that were used in cataloging with LC cards can also be applied to this situation. It takes 40.20 hours to catalog the 200 titles and costs $217.38 plus classification instruments.

Libraries cataloging with LC cards but utilizing NLM subject headings must be prepared to use the LC classification schedules and MeSH to catalog books for which no card sets arrive. Obviously, the same delays described above will be encountered utilizing this method.

It should be noted that still another alternative is available: accepting LC bibliographic information, but utilizing MeSH and NLM classification, or some other classification system. It was arbitrarily decided that such a combination of alternatives would be cumbersome and hence was not studied as an alternative method of cataloging.

4. Cataloging from LC proofcopy

In this paper cataloging from LC proofcopy means the acceptance of bibliographic and classification data on the copy (with minor alterations as necessary) and the subsequent creation of card sets based on the copy. Libraries can purchase from the Library of Congress proofcopy prepared for the printed cards. They may be purchased as partial sets which are sent once a week at the cost of 10¢ a sheet. For an additional $1.50 per month per class

they can be purchased in a cut and punched form. Not only can the latter be filed easier, but they can be used as copy for facsimile reproduction.

Again, using a base of 200 book titles a year, the assumption can be made that proofcopy could be secured for 196. Because different steps are involved in utilizing the LC catalog information in this format, the cost to catalog the 196 titles is $147.00 and requires 33.51 hours. Four of the titles would require original cataloging at a cost and time of $6.48 and 1.33 hours. In addition, the cost of the proofcopy must be considered. The cost depends upon whether whole or partial sets are ordered and whether ordered in the cut and prepunched format. An estimate for libraries receiving precut and prepunched sets of the "R" classification is $94.80 per year. The total cost of using this method for 200 titles is then $248.28 requiring 34.84 hours to process.

It should be noted that hospital libraries would perhaps need more than just the "R" section. Any additional sets ordered would increase cataloging costs if the proofcopy were used only for cataloging purposes. Again, the same delays would be encountered as noted above when using LC cards to catalog.

5. Cataloging from NLM bibliographic information

In this method of cataloging NLM catalog information available from the NLM Catalog and Current Catalog is used to make card sets. This method is second only to original cataloging in the amount of time and material and labor cost involved, especially if no facilities for card reproduction are available to the library. Here too, as with the LC proofcopy and cards, there is the problem of delay in obtaining the catalog information. McNamara determined that LC bibliographic information appears on an average of one month earlier than that of NLM, showing that, from the standpoint of time, it is preferable to use LC information. She also determined that within the time limits set for her study, a library would have to catalog one out of four titles originally if it depended on NLM for catalog information. In other words, for the example of 200 titles, NLM catalog information would be available for 150. Using the least expensive ($.84 per book) and least time-consuming (12.63 minutes) alternative of cataloging with NLM bibliographic information, cataloging 150 books would cost $126.00 and take 31.57 hours. Applying the same basic figures for original cataloging used in previous examples, cataloging the remaining 50 books would cost $81.00 and take 16.66 hours. Thus, the cost and time involved in cataloging the 200 books is $207.00 and 48.23 hours.

In addition to basic time and cost factors, the library must subscribe to the biweekly issues of Current Catalog ($13.00 per year) and the annual bound cumulation of the NLM Catalog ($14.25 per year). Adding the cost of these items to $207.00, the total cost of cataloging the 200 books is $234.25.

In contrast to working with LC cards, cataloging with NLM bibliographic information necessitates searching for that information. A library cataloging with this system has to have time for searching and has to be willing and prepared to catalog originally those titles for which no information can be found.

Card-Mate Publication System

In an attempt to reduce the delays encountered by medical libraries cataloging with LC cards, Products of Information Systems has contracted with LC to produce card sets for English language medical and allied healing arts book titles cataloged at the Library of Congress. (11) For $675.00 per year libraries automatically receive monthly full card sets. During the year the total card sets would be over 2,400 titles.

At this time it does not appear justifiable for a hospital library to participate in this program unless it uses at least 1,000 of the card sets sent to it by Card-Mate. Otherwise it would be paying more money per card set than for sets currently available from LC.

If a library purchases 1,000 books covered by Card-Mate, each corresponding card set costs 67.50¢. Libraries requesting cards with tracings already printed on them would save time and money by not having to order cards, change added entries, type changes on the master card, or type added entries on additional cards. This would save 30.94¢ and 5.11 minutes per book, and the cost of each card set would be reduced to 36.56¢.

SUMMARY

For each method analyzed, hypothetical cataloging situations have been presented. Each involved 200 titles. The figures used were those for the least expensive alternative of cataloging within each method. The costs of bibliographic instruments (but not classification instruments) were included in the total costs.

Original cataloging took the most time, 66.63 hours. Using LC cards took the least time, only 33.93. If proofcopy is used, the time required is increased only nominally if facsimile copying of the master card is used as an alternative (34.84 hours). Utilizing LC classification and bibliographic information, but applying MeSH again increased the time to 40.20 hours. If NLM catalog information is used, it does not require as much time as original cataloging, but is significantly higher than accepting LC catalog information (48.23 hours).

Original cataloging was the most expensive of all methods measured in this study ($324.00). Although cataloging with NLM Catalog information was more expensive ($207.00) than cataloging based on LC proofcopy ($153.48), the annual cost of the proofcopy ($94.80) is greater than that of Current Catalog and NLM Catalog ($27.25). When the costs of these bibliographic instruments were added to cataloging costs, using [illegible] proofcopy cost a little more ($248.28) than using NLM Catalog information [illegible]4.25) Cataloging with LC cards ($186.02) cost about half of the cost of [illegible]inal cataloging and was the least expensive method measured, while LC ca[illegible]ith NLM subject headings ($217.38) was the second least expensive.

All of the above figures were obtained by using the least expensive and least time-consuming alternative of each method. If other alternatives are used, the costs and times would be more than those presented here.

This is a preliminary study which may provide the basis for further study of monograph cataloging in hospital libraries. It is hoped that this presentation will be helpful to hospital librarians who are considering or making changes in their cataloging operations or are cataloging collections which have not been previously cataloged.

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Table 1. Original Cataloging: Time and Cost of Each Work Unit
With Four Alternative Sequences

	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
Work Units	Time	Cost	Time	Cost	Time	Cost	Time	Cost
Establishing temporary entries*	.85	4.42	.85	4.42	.85	4.42	.85	4.42
Typing temporary slips for the public catalog*	1.18	6.18	1.18	6.18	1.18	6.18	1.18	6.18
Filing temporary slips in the public catalog	.35	1.82	.35	1.82	.35	1.82	.35	1.82
Establishing main and name added entries+	3.02	25.67	3.02	25.67	3.02	25.67	3.02	25.67
Assigning subject headings+	3.95	33.56	3.95	33.56	3.95	33.56	3.95	33.56
Checking the library's subject catalog for examples of call numbers+	1.34	11.39	1.34	11.39	1.34	11.39	1.34	11.39
Assigning call number+	2.63	22.36	2.63	22.36	2.63	22.36	2.63	22.36
Checking the shelf list, making and filing a temporary slip+*	1.32	11.26	1.32	11.26	1.32	11.26	1.32	11.26
Writing out the bibliographic information +*	2.52	21.51	2.52	21.51				
Writing additional bibliographic information +*					.70	6.04	.70	6.04
Typing the master card and proofreading it+*	2.66	23.22	2.66	23.22	2.66	23.22	2.66	23.22
Typing additional cards and proofreading them*	6.80	37.78			6.80	37.78		
Facsimile copying of additional cards *			.19	6.32			.19	6.32
Typing added entries and proofreading them			1.80	9.36			1.80	9.36
Totals	26.62	199.17	21.81	177.07	24.80	183.68	19.99	161.60

Time in minutes - Cost in cents
* Cost of supplies figured into cost of these units
+ Units which were considered "professional" in this study

Table 2. Cataloging with LC Cards: Time and Cost of Each Work Unit
With Two Alternative Sequences

	Alternative 1		Alternative 2	
Work Units	Time	Cost	Time	Cost
Establishing temporary entries *	.85	4.42	.85	4.42
Typing multi-copy order forms *	1.75	3.71		
Preparing multi-copy order forms for sending to the Library of Congress *	.19	1.33		
Typing card order forms provided by the Library of Congress			1.94	10.09
Preparing card order forms provided by the Library of Congress for sending to the Library of Congress *			.15	1.12
Unpacking LC cards and checking against the order forms	.12	.62	.12	.62
Matching LC cards with order file information	.43	2.24	.43	2.24
Matching LC cards with the books	.79	4.11	.79	4.11
Typing temporary slips for the public catalog *			1.18	6.18
Filing temporary slips in the public catalog	.35	1.82	.35	1.82
Comparing bibliographic information with the books and checking added entries listed to determine if anything should be added, deleted, or altered +	.72	6.12	.72	6.12
Checking the shelf list, making and filing a temporary slip +*	1.32	11.26	1.32	11.26
Typing additions or changes on the master card (body) and proofreading it +	.50	4.25	.50	4.25
Typing call numbers and added entries on additional cards and proofreading	2.92	15.18	2.92	15.18
Totals	9.94	55.06	11.27	67.41

Time in minutes - Cost in cents
*Cost of supplies figured into cost of these units
+Units which were considered "professional" in this study

Table 3. Cataloging with LC Cards, but Utilizing NLM Subject Headings:
Time and Cost of Each Work Unit With Two Alternative Sequences

	Alternative 1		Alternative 2	
Work Units	Time	Cost	Time	Cost
Establishing temporary entries *	.85	4.42	.85	4.42
Typing multi-copy order forms *	1.75	3.71		
Preparing multi-copy order forms for sending to the Library of Congress*	.19	1.33		
Typing card order forms provided by the Library of Congress			1.94	10.09
Preparing card order forms provided by the Library of Congress for sending to the Library of Congress *			.15	1.12
Unpacking LC cards and checking against the order forms	.12	.62	.12	.62
Matching LC cards with order file information	.43	2.24	.43	2.24
Matching LC cards with the books	.79	4.11	.79	4.11
Typing temporary slips for the public catalog *			1.18	6.18
Filing temporary slips in the public catalog	.35	1.82	.35	1.82
Comparing bibliographic information with the books and changing LC subject headings to NLM headings +	2.00	17.00	2.00	17.00
Checking the shelf list, making and filing a temporary slip +*	1.32	11.26	1.32	11.26
Typing additions or changes on the master card (body) and proofreading it +	1.07	9.10	1.07	9.10
Typing call numbers and added entries on additional cards and proofreading	2.92	15.18	2.92	15.18
Totals	11.79	70.79	13.12	83.14

Time in minutes - Cost in cents
*Cost of supplies figured into cost of these units
+Units which were considered "professional" in this study

Table 4. Cataloging from LC Proofcopy: Time and Cost of each Work Unit with Two Alternative Sequences

Work Units	Alternative 1		Alternative 2	
	Time	Cost	Time	Cost
Establishing temporary entries *	.85	4.42	.85	4.42
Receiving and unpacking proofcopy	.50	2.60	.50	2.60
Sorting and filing proofcopy	.26	1.35	.26	1.35
Matching books with proofcopy	.43	2.24	.43	2.24
Typing temporary slips for the public catalog *	1.18	6.18	1.18	6.18
Filing temporary slips in the public catalog	.35	1.82	.35	1.82
Comparing bibliographic information with the book and checking added entries listed to determine if anything should be added, deleted, or altered +	.72	6.12	.72	6.12
Checking the shelf list, making and filing a temporary slip +*	1.32	11.26	1.32	11.26
Typing the master card and proofreading +*	2.66	23.22	2.66	23.22
Typing additional cards and proofreading them +*			6.80	37.78
Facsimile copying of additional cards *	.19	6.32		
Typing added entries and proofreading them	1.80	9.36		
Totals	10.26	74.89	15.07	96.99

Time in minutes - Cost in cents

* Cost of supplies figured into cost of these units

+ Units which were considered "professional" in this study

Table 5. Cataloging from NLM Bibliographic Information: Time and Cost of each Work Unit with Four Alternative Sequences

Work Units	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
	Time	Cost	Time	Cost	Time	Cost	Time	Cost
Establishing temporary entries *	.85	4.42	.85	4.42	.85	4.42	.85	4.42
Typing temporary slips for the public catalog *	1.18	6.18	1.18	6.18	1.18	6.18	1.18	6.18
Filing temporary slips in the public catalog	.35	1.82	.35	1.82	.35	1.82	.35	1.82
Searching for NLM bibliographic information	2.00	10.40	2.00	10.40	2.00	10.40	2.00	10.40
Facsimile copying of NLM bibliographic information *	1.56	4.59	1.56	4.59				
Copying NLM bibliographic information *					1.70	8.84	1.70	8.84
Comparing bibliographic information with the book and checking added entries listed to determine if anything should be added, deleted, or altered +	.72	6.12	.72	6.12	.72	6.12	.72	6.12
Checking the shelf list, making and filing a temporary slip +*	1.32	11.26	1.32	11.26	1.32	11.26	1.32	11.26
Typing the master card and proofreading it +*	2.66	23.22	2.66	23.22	2.51	23.22	2.66	23.22
Typing additional cards and proofreading them *	6.80	37.78			6.80	37.78		
Facsimile copying of additional cards *			.19	6.32			.19	6.32
Typing added entries and proofreading them			1.80	9.36			1.80	9.36
Totals	17.44	105.79	12.63	83.69	17.58	110.04	12.77	87.94

Time in minutes - Cost in cents

* Cost of supplies figured into cost of these units
\+ Units which were considered "professional" in this study

Table 6

Comparison of Time and Cost of five methods of Cataloging Monographs in a Hospital Library With Different Alternatives

	Time (in minutes)	Cost (in dollars)
(1) Original cataloging		
Alternative 1	26.62	1.99
Alternative 2	21.81	1.77
Alternative 3	24.80	1.84
Alternative 4	19.99	1.62
(2) Cataloging with LC cards		
Alternative 1	9.94	.55
Alternative 2	11.27	.67
(3) Cataloging with LC cards, but utilizing NLM subject headings		
Alternative 1	11.79	.71
Alternative 2	13.12	.83
(4) Cataloging from LC proofcopy		
Alternative 1	10.26	.75
Alternative 2	15.07	.97
(5) Cataloging from NLM bibliographic information		
Alternative 1	17.44	1.06
Alternative 2	12.63	.84
Alternative 3	17.58	1.10
Alternative 4	12.77	.88

Table 7

Cataloging Instruments

Bibliographic instruments	
1. Library of Congress cards	
(a) Ordered by LC card number--first card, if three or more copies are ordered at the same time	$ .10
(b) Ordered by author and title--first card, if three or more copies are ordered at the same time, the order is on slips, and all items of information are given on each individual slip	.15
(c) All additional cards	.06
2. Library of Congress proofsheets	
(a) Partial set (per sheet)	.10
(b) Service charge for cutting and punching per month per class	1.50
3. National Library of Medicine Current Catalog (1969)	
(a) Current Catalog (26 biweekly issues)	13.00
(b) NLM Catalog (annual bound cumulation of Current Catalog)	14.25
Classification instruments	
1. Library of Congress classification schedules	
B Philosophy and Religion (Philosophy section) (1968)	2.25
H Social Science (1965)	4.25
L Education (1966)	2.00
Q Science (1967)	2.25
R Medicine (1966)	2.00
S Agriculture (1965)	1.75
T Technology (1965)	1.00
Z Bibliography and Library Science (1965)	2.25
	17.75
2. Subject headings used in the Dictionary Catalogs of the Library of Congress, 7th edition, 1966	15.00
3. National Library of Medicine Classification: a scheme for the shelf arrangement of books in the field of medicine and its related sciences, 3rd edition, 1964	2.00
4. Medical Subject Headings (MeSH) (1969)	3.00

Table 8

Supplies Needed for Cataloging

Temporary slips for public catalog and for shelf list:
3" x 5" slips @ 00/4¢
.04¢/1 slip

Slips for writing ou bibliographic information:
5" x 8" slips @ 100/9¢
.09¢/1 slip

Public catalog cards:
Demco 23-266 cards, unruled, punched, light weight, 100% rag stock
5,000 cards @ $6.05/1,000
.605¢/1 card

Xerox card sheets:
Walker-Goulard Plehn Company. 4 cards/sheet. Each sheet has four holes and is perforated into four sections. 100% rag. #250 weight
10,000 sheets @ $28.55/1,000
2.855¢/1 sheet

Xerox paper:
Nekoosa. 10" x 14". Grain 14. 20#
$5.28/1,000 sheets
.528¢/1 sheet

Xerox Machine--exposures:
Xerox 720
2.5¢/exposure

Date due slips:
Demco 38-297 3" x 5"
5,000 slips @ $2.80/1,000
.28¢/1 slip

Multi-copy order forms:
Demco 18-269 carbonless
5,000 sets (3 forms/set) with library imprint @ $24.90
.498¢/1 set
.166¢/1 form
2/5 of 1 form = .066¢

Envelopes
34¢/100 envelopes
.34¢/1 envelope